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tion, however, based upon considerations drawn from the form of the tower, the distinctly varying conditions of two opposed faces, the absence of fluidal overflow at any point, and the sharp line of demarkation that separated the base of the structure from the enveloping cone or dome (in which a true flow was plainly apparent, exemplifying the Georgios-Santorin dome of 1866 and the Vesuvian 'monticule' of 1895), and a review of the difficulties that stand in the way of the Lacroix explanation, forces upon me very strongly the impression that the tower was merely the ancient core of the volcano that had been loosened from its moorings and lifted bodily outward by the force of the volcano's activity. The whole appearance of the tower was much more suggestive of an ancient rock metamorphosed by heat (or steam) action than of a newly formed and rapidly solidified lava, and as early as August, 1902 (*McClure's Magazine*), when its extraordinary relations were still unknown, I referred to it (and others, likewise) as giving the aspect of 'burned-out cinder masses.' This view of the structure of the Pelée tower has, indeed, suggested itself as a possibility to other geologists, and I believe was held tentatively by some before I had myself seriously considered it; but at this time it does not seem to me that there can be much doubt as to its broad accuracy.

The lifting of giant rock-masses or mountain-cores through the crateral axis of a volcano is not entirely unknown, for it is now many years since Abich described, in his monumental work on Transcaucasia, the upheaved mass occupying a portion of the crateral wall of the Palandokän volcano; and a somewhat similar structure had been noted still earlier by Scrope in the Puy Chopine of the Auvergne. Neither of these structures was in any way comparable in magnitude with the Pelée tower, but their manner of uplift was not unlikely largely identical. The fact that most volcanoes 'plug' themselves after varying periods of activity, and that some of these reopen directly in the line of earlier eruptions, would in itself seem to suggest that from time to time extravasated plugs (neck-cores or towers) should appear at the surface, and

I take it for granted that some, at least, of what have heretofore been considered as volcanic erosion-fragments are in reality merely structures of this kind. It can hardly be possible that upthrusts of this nature should not exist. Sir Richard Strachey has, indeed, called attention (in *Nature*) to numerous 'towers' or fingers occurring over the trap-flows of the Dekkan plateau, and he likens these (observed and sketched by him the better part of seventy years ago) to the Pelée excrescence. In how far the structures may or may not be identical only a new study of the Indian field can positively determine; but I believe that the Indian figures will be found to represent the extremely acute 'thumbs' and pinnacles which surmount the trap plateau of different parts of Greenland (Omenak Promontory, Disko Island), whose origin through erosion can not be questioned. Somewhat more doubtful may be the character of the (true) Devil's Thumb which marks the entrance to Melville Bay, and whose picture looms up in my mind very similar to that of Pelée's tower.

In this brief note it is impossible to enter into a discussion of the difficulties that oppose themselves to the generally accepted view of the structure of the Pelée tower; some of these will be more particularly referred to in a general paper which is about being sent to press. The view here expressed may lead to a better understanding of the relations of the ejected fragmental rock, the greater part of which, it seems to me, is from the old stock of the volcano, with the chemical and physical composition of which it so closely agrees.

ANGELO HEILPRIN.

PHILADELPHIA,

May 5, 1904.

#### CURRENT NOTES ON METEOROLOGY.

##### A NEW SUNSHINE RECORDER.

In *Symons's Meteorological Magazine* for March, the new Dawson-Lander sunshine recorder is thus described. The instrument consists of a fixed drum, on which some silver chloride photographic printing paper is fastened, under a film of transparent celluloid. An outer cover is rotated by clock-work once

in twenty-four hours, and a narrow slit is thereby directed towards the sun. A hood, funnel-shaped, protects the slit from diffused light, and allows of an error of about half an hour in the clock before sunlight is cut off from the slit. The drum carrying the sensitive paper travels, without rotation, along the axis of the cylinder, so that the record of a number of days may be obtained, one below the other. The advantages of this instrument are as follows: The chloride of silver paper makes possible a standard of intensity of sunshine which can be reproduced; the same size of paper is used at all seasons, and the instrument is serviceable for the sunshine of polar as well as of temperate latitudes.

#### CLIMATE OF CHILE.

A PAPER on 'The Economic Geography of Chile,' by J. Russell Smith, in the *Bulletin of the American Geographical Society*, XXXVI., 1904, 1-21, lays emphasis on the striking climatic contrasts between the northern desert provinces and the southern cool and rainy districts within the latitudes of the prevailing westerly winds. Between the deserts of the north and the forests of the south lie the agricultural regions of central Chile. Were it not for the mineral wealth, the great seaports and settlements of northern Chile would never have been developed, for the climatic conditions are distinctly hostile to human occupation. In the south, where the abundant rainfall favors the growth of trees, future deforestation will open the land more and more for settlement, but 'the economic center of gravity, and the home of four fifths or more of Chilean population, is, and must continue to be, in the central or agricultural region.' These large facts of the climatic control of settlement and occupation in Chile can not fail to impress themselves upon even the most casual observer who has the opportunity, which in 1897 came to the compiler of these notes, of making a climatic cross-section along the west coast of South America by taking the voyage from the Straits of Magellan to Panama.

#### MOUNTAIN SICKNESS.

IN Mr. D. W. Freshfield's book, 'Round Kangchenjunga,' it appears that those persons who suffered from mountain sickness were most affected between 15,000 and 16,000 feet, and that there was no increase of symptoms up to 20,000 feet. One member of the party 'had a constitution on which the only effect of altitudes of 20,000 feet was to increase his appetite and consequently his weight.' Mr. Freshfield was able to walk from 13,000 to 16,000 feet without halting, and sees no obstacle, so far as the physiological effects of diminished pressure are concerned, to an ascent of loftier mountains than Kangchenjunga.

#### WRECKS AND CASUALTIES ON THE GREAT LAKES IN 1903.

ACCORDING to the 'Meteorological Chart of the Great Lakes, Summary for the Season of 1903,' by A. J. Henry and N. B. Conger (Weather Bureau No. 298, 1904), twenty-four vessels became total losses through stress of weather. The loss due to fog was \$277,500. The number of lives lost through stormy weather was forty-nine. R. DE C. WARD.

#### PROGRESS OF THE CONCILIIUM BIBLIO- GRAPHICUM.

DR. HERBERT HAVILAND FIELD, director of the Concilium, sends us an advance copy of his report, the most encouraging by far which he has been able to issue.

The number of cards issued since the foundation of the Concilium is 12,942,000.

The principal features of the progress of the past year are set forth in this very interesting report.

Of especial interest to Americans is the establishment of a set of the complete reference catalogue in the public room of the American Museum of Natural History, where it will not only be accessible to students, but from which immediate orders can be filled. This arrangement has been brought about by conference between the director of the concilium and Director Bumpus of the museum.